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TWO NEW SPECIES OF BRACHYTHECIUM.

BRACHYTHECIUM NOVEBORACENSE sp. nov. Gametophyte in loosely interwoven, thin, bright green mats, darker green to brown below; stems ascending or creeping, irregularly and rather sparingly branching, sparingly radiculose except when in contact with the soil; branches 3-6$^{cm.}$ long, somewhat fasciculate; branch leaves distant, loosely spreading, not at all or very slightly striate when dry, very narrowly decurrent, ovate-lanceolate, slender pointed, strongly serrulate above, about 2×0.75^{mm}, costate nearly to middle; median cells linear-vermicular, 12–18:1; basal cells enlarged, shorter and broader, oblong to subquadrate; stem leaves very distant below, spreading, broadly ovate, acuminate, $2.25 \times 1^{mm.}$, alar cells somewhat inflated, with a tendency to form auricles, otherwise like branch leaves; costa sometimes double with one long and one short branch. Monoicous; perichætial leaves squarrose, long filiform-acuminate from an ovate base, ecostate, nearly or quite entire.

Sporophyte 2–2.5$^{cm.}$ high; seta red, strongly twisted to the right, rough with scattered papillæ; capsule sub-erect and slightly unsymmetric when fresh and ripe, curved and strongly contracted under the mouth when dry and empty, light red-brown, 2–2.25$^{mm.}$ long, 3 1; operculum long conic, abruptly apiculate; annulus? Teeth papillose above with long sharp papillæ; median line very indistinct in lower two-thirds of teeth; inner peristome nearly as long as teeth, with basal membrane as long as segments; segments papillose, more or less split; cilia single and large or double; spores ripening in autumn (Dec.) unequally developed, rough, the largest 0.026$^{mm.}$

Type from peaty soil in swampy woods, Valley Stream, L. Id., December 9, 1899; closely interwoven with *B. acutum.*

This might be easily mistaken for *B. rutabulum* when sterile, and indeed would be hard to distinguish from it. The alar cells, however, are larger and the leaf apices shorter as a rule. The leaf apices are longer and alar cells smaller than is usual in *B. rivulare.* The leaf characters are somewhat intermediate between these two species and those of *B. Starkei,* but the stem leaves are longer and ovate rather than deltoid-ovate. The stem leaves are more distant than in any of the related species, reminding one of *Hypnum cordifolium.* The sporophyte is distinct from that of any other species in the light colored capsule, sub-erect and slightly unsymmetric and much smaller than in any of the related species; teeth much narrower, without a distinct median line in the upper middle portion.

This species is so distinct that collectors ought to have no difficulty in recognizing it. A specimen from Van Cortland Park, New York City, has the seta rougher than in the type.

BRACHYTHECIUM WASHINGTONIANUM Eaton, Ms., newly described. Gametophyte in loose mats of bright glossy yellow-green; stems creeping, ascending, 5-10$^{cm.}$ long, closely and more or less regularly pinnate, particularly near the ends; branches 7–12$^{\text{mm.}}$ long; branch leaves equally spreading, strongly plicate, both moist and dry, ovate, not decurrent, 1.5–1.75 × 0.45–0.70$^{\text{mm.}}$, broadest a little above the base and thence gradually narrowed to a long narrow apex, more strongly serrate above than in *B. lamprochryseum;* costa extending from one-half to two-thirds the entire length of the leaf; median cells linear-vermicular 0.080–0.125$^{\text{mm.}}$ in length; 10–16:1; basal cells shorter and broader, extreme alar sometimes inflated and vesicular with a single row of much enlarged rectangular cells along the base (These frequently fail to be detached with the leaf); stem leaves of lower stems slenderly deltoid-ovate, auricled and decurrent (The auricles are often made more distinct by strong plicæ near the margin, as in *Climacium Americanum*), 2–2.5$^{\text{mm.}}$ long and about one-half as wide at the widest portion of the base; median and basal cells as in the branch leaves; auricular cells rectangular to hexagono-rhomboidal, the lower somewhat inflated and vesicular. Dioicous apparently; no male buds found; perichætial leaves sheathing with long squarrose filiform apices, entire or distantly dentate above, ecostate or rarely with traces of a costa.

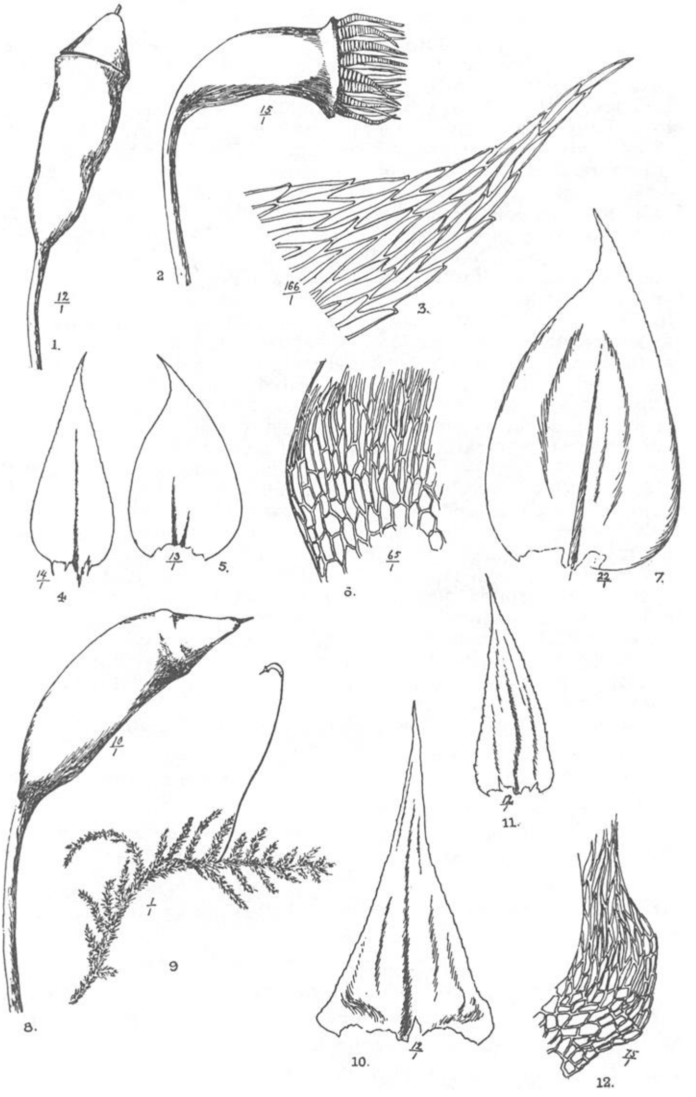
Sporophyte 3–4$^{\text{cm.}}$ high; seta red, becoming red-brown when old, very rough, very little or not at all twisted; capsule oblong-cylindric, arcuate and inclined, to nearly horizontal, with operculum about 3.5$^{\text{mm.}}$ long, about 4:1; somewhat contracted under the mouth when dry; operculum conic and rostrate with a shining black, needle-like beak, about one-third the height of the entire operculum; annulus inconspicuous, of a single row of cells; teeth red; segments slender, widely open along the keel, from a basal membrane about one-half their height; cilia two or three, well developed but shorter than the segments, nodose or slightly appendiculate; spores about 0.013$^{\text{mm.}}$, shrunken and apparently immature on date of collection, November 23, 1890

Type locality, moist banks, Mason county, Washington.

G. V. Piper, No. 25, Nov. 23, 1890.

Type in Eaton Herbarium at Yale. Co-type in Herbarium of Columbia University.

Closely related to *B. asperrimum* and *B. lamprochryseum*, differing from both in its almost regularly pinnate branching and auriculate stem leaves; also from the former in the narrower, more strongly plicate stem leaves, branch leaves not decurrent, and in the longer, more slender, and more arcuate capsule. From the latter it also differs in the more slender habit and narrower, less plicate stem leaves. *B. asperrimum* and *B. Washingtonianum* are characterized by an operculum abruptly rostrate when dry, with a slender black shining beak, the operculum itself being some shade of brown. This is well illustrated in Sullivant's figures of *B. asperrimum.* Icones Musc. Suppl., *pl. 76.* When moist this operculum becomes long conic and rostrate, as shown in the plate. Taken by itself, this species might be referred to



Description of Plate I.—Figs. 1–7, *B. Noveboracense:* 1 and 2. Capsules. 7. Stem leaf. 6 and 3. Basal angle and apex of the same. 5. Stem leaf with double costa. 4. Branch leaf. Figs. 8–12, *B. Washingtonianum:* 10. Stem leaf. 12. Basal angle of the same. 11. Branch leaf

Eurhynchium or *Camptothecium*, but it is certainly more closely related to *B. asperrimum* and *B. lamprochryseum* than to any other species of Musci. The capsules of *B. asperrimum* in Sullivant's figures are more slender than is the rule in a large series of specimens examined.

The following additional collections have been made:

J. B. Leiberg (No. 573), Lake Pend d'Orielle, Idaho, in calcareous springs, Jan. 21, '91. This is more robust and less pinnate than the type and varies in the direction of *B. lamprochryseum.* Macoun's Canadian Musci, 439, *Hypnum* (*Camptothecium*) *megaptilum*, on base of old stumps near the sea, Hastings, Barnard Inlet, B C., is apparently this species. Both these specimens have been previously referred by me to *B. lamprochryseum*, this being the nearest species previously described.

FURTHER NOTES ON MOUNTING MOSSES.

IT is an acknowledged fact that the present method of mounting mosses is productive of anything but good looking sheets after the collection has been in existence for some time. Unless the sheet is full, there is always the temptation to add just one more specimen. Then as study proceeds, some of these specimens are almost sure to be referred to other places, and must be detached from the sheet, leaving unsightly spots. By the use of half or quarter sheets much of this difficulty may be avoided, but for one who wishes to mount mosses on sheets the same size of those his flowering plants are mounted upon, some sort of an elastic system must be adopted which will allow him to fill the whole sheet an once, and yet permit the collection to grow. The method here illustrated seems to meet all requirements. It consists of the ordinary mounting sheet of standard size, in which sixteen short slits are cut, and into which the corners of four quarter sheets may be inserted. The specimens are then mounted on the small sheets, and afterwards fastened to the ordinary sheet by placing the corners in the slits. This method has the following advantages: Specimens wanted for study may be detached instantly. Specimens may be changed about on the sheet without damaging the sheet or specimens. Different species of the same genus may be mounted on the same sheet temporarily, and later replaced by other specimens, in which case all the specimens of one species may be kept on the same sheet, and lastly, the whole collection can be filed away in covers uniform with those of flowering plants. While this is primarily an elastic system the mounts may be made permanent by fastening the small sheets to the large one with a drop of glue.—*Willard N. Clute, Binghamton, N. Y.*